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Conference Abstract

The use of avian museum specimen data in phenology studies: prospects and challenges

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Abstract

Museum specimens offer a rich source of data on both long-term averages and temporal trends in organismal phenology. To date much of this work has focused on plants, but animal specimens are also useful in this regard. In particular, bird specimens may include data on age, gonad size and development, and molt, all of which are relevant to estimating breeding phenology. In addition, bird collections include nests and eggs, which are direct records of breeding. These data are some of the richest available for any vertebrate group, and the potential for integration with citizen-science-based data (e.g. eBird) is extremely promising. However, there are a number of challenges associated with use of these data, including biased geographic sampling, incomplete digitization, and non-uniform data standards, that currently limit their utility. In addition, methods for analysis of these data have not been well developed. Here, we outline informatics challenges associated with developing a database of avian gonad size data. In addition, we present a novel analytical framework for estimating phenology from such data (Fig. 1) that is broadly applicable to seasonal phenotype measurements.

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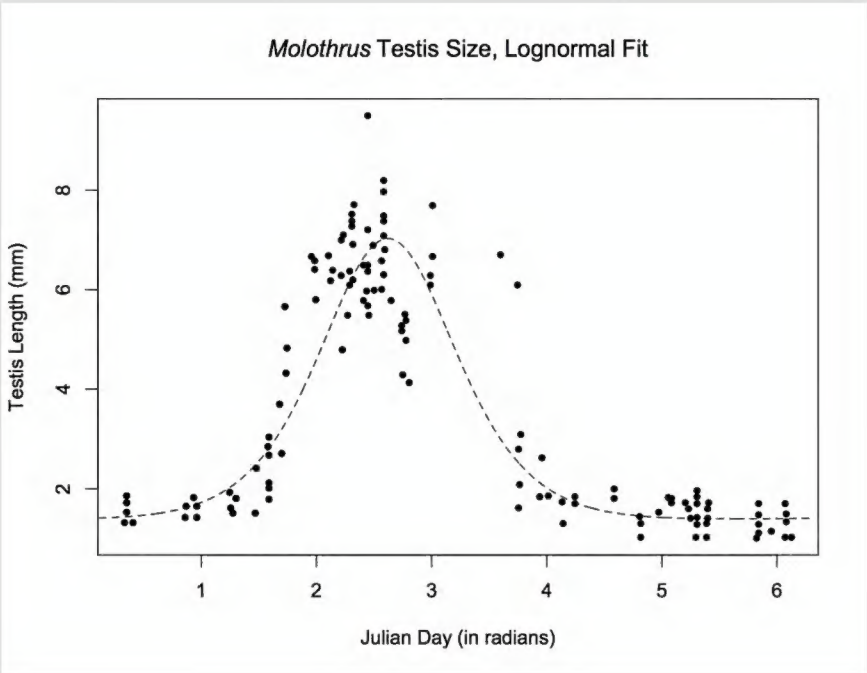

Figure 1.

Phenology of *Molothrus* testis development, estimated using log-normal periodic regression (data from Payne 1973, *Condor* 75: 80-99).

Keywords

phenology, birds, gonad, periodic regression

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